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SEVENTH **7** EDITION

MEASURING AND MANAGING THE
VALUE OF COMPANIES

TIM KOLLER • MARC GOEDHART • DAVID WESSELS

MCKINSEY & COMPANY

VALUATION

**MEASURING AND
MANAGING THE
VALUE OF
COMPANIES**

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SEVENTH EDITION

McKinsey & Company

Tim Koller

Marc Goedhart

David Wessels

WILEY

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Finance in a Nutshell

Companies create value when they earn a return on invested capital (ROIC) greater than their opportunity cost of capital.¹ If the ROIC is at or below the cost of capital, growth may not create value. Companies should aim to find the combination of growth and ROIC that drives the highest discounted value of their cash flows. In so doing, they should consider that performance in the stock market may differ from intrinsic value creation, generally as a result of changes in investors' expectations.

To illustrate how value creation works, this chapter uses a simple story. Our heroes are Lily and Nate, who start out as the owners of a small chain of trendy clothing stores. Success follows. Over time, their business goes through a remarkable transformation. They develop the idea of Lily's Emporium and convert their stores to the new concept. To expand, they take their company public to raise additional capital. Encouraged by the resulting gains, they develop more retail concepts, including Lily's Furniture and Lily's Garden Supplies. In the end, Lily and Nate are faced with the complexity of managing a multibusiness retail enterprise.

THE EARLY YEARS

When we first met Lily and Nate, their business had grown from a tiny boutique into a small chain of trendy, midpriced clothing stores called Lily's Dresses. They met with us to find out how they could know if they were achieving attractive financial results. We told them they should measure their business's return on invested capital: after-tax operating profits divided by the capital invested in working capital and property, plant, and equipment.

¹ A simple definition of return on invested capital is after-tax operating profit divided by invested capital (working capital plus fixed assets). ROIC's calculation from a company's financial statements is explained in detail in Chapters 10 and 11.

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Then they could compare the ROIC with what they could earn if they invested their capital elsewhere—for example, in the stock market.

Lily and Nate had invested \$10 million in their business, and in 2020 they earned about \$1.8 million after taxes, with no debt. So they calculated their return on invested capital as 18 percent. They asked what a reasonable guess would be for the rate they could earn in the stock market, and we suggested they use 10 percent. They easily saw that their money was earning 8 percent more than what we were assuming they could earn by investing elsewhere, so they were pleased with their business's performance.

We commented that growth is also important to consider in measuring financial performance. Lily told us that the business was growing at about 5 percent per year. Nate added that they discovered growth can be expensive; to achieve that growth, they had to invest in new stores, fixtures, and inventory. To grow at 5 percent and earn 18 percent ROIC on their growth, they reinvested about 28 percent of their profits back into the business each year. The remaining 72 percent of profits was available to withdraw from the business. In 2020, then, they generated cash flow of about \$1.30 million.

Lily and Nate were satisfied with 5 percent growth and 18 percent ROIC until Lily's cousin Logan told them about his aggressive expansion plans for his own retail business, Logan's Stores. Based on what Logan had said, Lily and Nate compared the expected faster growth in operating profit for Logan's Stores with their own company's 5 percent growth, as graphed in Exhibit 2.1. Lily and Nate were concerned that Logan's faster-growing profits signaled a defect in their own vision or management.

"Wait a minute," we said. "How is Logan getting all that growth? What about his ROIC?" Lily and Nate checked and returned with the data shown in Exhibit 2.2. As we had suspected, Logan was achieving his growth by

EXHIBIT 2.1 Expected Profit Growth at Logan's Stores Outpacing Lily's Dresses

After-tax operating profit,
\$ thousand

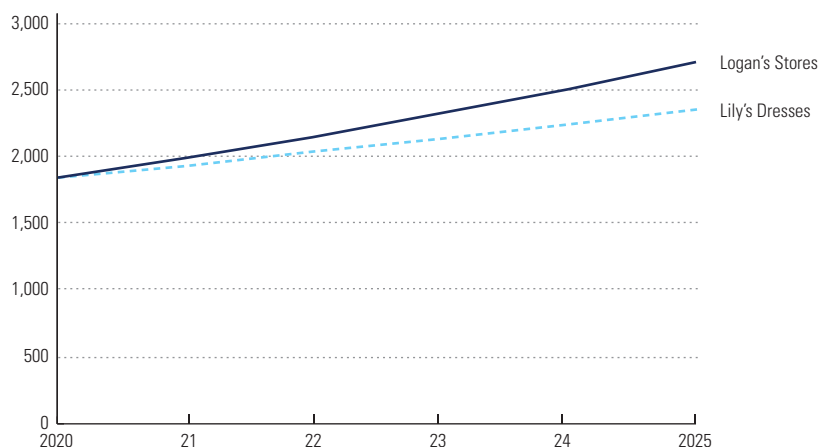
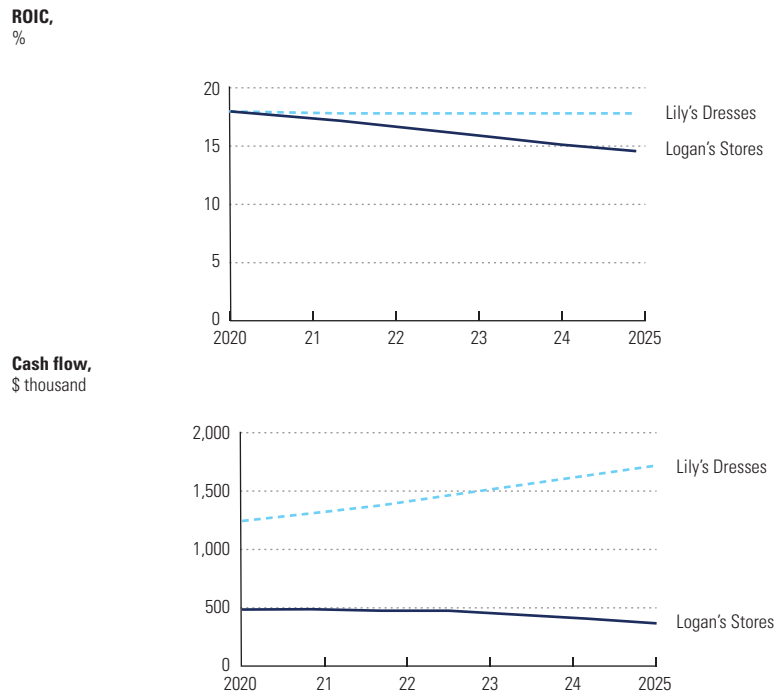


EXHIBIT 2.2 **Lily's Dresses Outperforming in Return on Invested Capital (ROIC) and Cash Flow**

investing heavily. Despite all the growth in operating profit, his company's ROIC was declining significantly, so cash flow was slipping downward.

We asked the two why they thought their stores earned higher returns on capital than Logan's. Nate said one reason was that their products were unique and cutting-edge fashion, so their customers were willing to pay higher prices for their dresses than for the products at many other dress shops. Lily added that each of their stores attracted more customers, so their sales per square foot (a proxy for fixed costs) were greater than Logan's. As they saw it, Logan's products were not much different from those of his competitors, so he had to match his prices to theirs and had less customer traffic in his stores. This discussion helped Nate and Lily appreciate that it was beneficial to consider ROIC along with growth.

A NEW CONCEPT

Several years later, Lily and Nate called us with a great idea. They wanted to develop a new concept, which they called Lily's Emporium. Lily's Emporium would operate larger stores carrying a wider assortment of clothes and accessories that their talented designers were working on. But when they looked at the projected results (they now had a financial-analysis department), they found that all the new capital investment to convert their stores would reduce ROIC and cash flow for four years, even though revenue and profits would be

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EXHIBIT 3.10 Impact on Value of Improving Margin vs. Capital Productivity

ROIC, %	Increase in value from improving ROIC by 1 percentage point ¹		
	% change		
	Through margin improvement	Through capital productivity	Ratio of margin impact to capital productivity impact
10	20.0	13.5	1.2x
20	6.7	2.9	2.3x
30	4.0	1.2	3.4x
40	2.9	0.6	4.6x

¹ For a company with a 9% cost of capital.

had low growth but increased their ROICs outperformed the faster-growing companies that did not improve their ROICs.

One final factor for management to consider is the method by which it chooses to improve ROIC. A company can increase ROIC by either improving profit margins or improving capital productivity. With respect to future growth, it doesn't matter which of these paths a company emphasizes. But for current operations, at moderate ROIC levels, a one-percentage-point increase in ROIC through margin improvement will have a moderately higher impact on value relative to improving capital productivity. At high levels of ROIC, though, improving ROIC by increasing margins will create much more value than an equivalent ROIC increase by improving capital productivity. Exhibit 3.10 shows how this works for a company that has a 9 percent cost of capital.

The reason for this relationship is best explained by an example. Consider a company with zero growth, \$1,000 of revenues, \$100 of profits, and \$500 of invested capital (translating to a 10 percent margin, a 50 percent ratio of invested capital to revenues, and ROIC of 20 percent). One way to increase ROIC by one percentage point is to increase the profit margin to 10.5 percent, increasing profits by \$5. Since the company is not growing, the \$5 of extra profits translates to \$5 of cash flow each year going forward. Discounting at a 10 percent cost of capital, this represents a \$50 increase in value. The company could also increase ROIC by reducing working capital. If it reduced working capital by \$24, ROIC would increase to 21 percent (\$100 divided by \$476). The company's value would increase only by the \$24 one-time cash inflow from reducing working capital. Future cash flows would not be affected.

ECONOMIC PROFIT COMBINES ROIC AND SIZE

You can also measure a company's value creation using economic profit, a measure that combines ROIC and size into a currency metric (here we use the

ECONOMIC PROFIT COMBINES ROIC AND SIZE 41

U.S. dollar). Economic profit measures the value created by a company in a single period and is defined as follows:

$$\text{Economic Profit} = \text{Invested Capital} \times (\text{ROIC} - \text{Cost of Capital})$$

In other words, economic profit is the spread between the return on invested capital and the cost of capital times the amount of invested capital. Value Inc.'s economic profit for year 1 is \$50 (Value Inc. must have \$500 of starting capital if it earns \$100 at a 20 percent return in year 1):

$$\begin{aligned}\text{Economic Profit} &= \$500 \times (20\% - 10\%) \\ &= \$500 \times 10\% \\ &= \$50\end{aligned}$$

Volume Inc.'s economic profit in year 1 is zero (Volume Inc. must have \$1,000 of starting capital if it earns \$100 at a 10 percent return in year 1):

$$\begin{aligned}\text{Economic Profit} &= \$1,000 \times (10\% - 10\%) \\ &= \$1,000 \times 0\% \\ &= \$0\end{aligned}$$

You can also value a company by discounting its projected economic profit at the cost of capital and adding the starting invested capital. Value Inc. starts with \$500 of invested capital. Its economic profit in year 1 is \$50, which grows at 5 percent. Discounting the growing economic profit at a 10 percent discount rate gives a present value of economic profit of \$1,000.⁹ Use these amounts to solve for value:

$$\begin{aligned}\text{Value} &= \text{Starting Invested Capital} + \text{PV}(\text{Projected Economic Profit}) \\ &= \$500 + \$1,000 \\ &= \$1,500\end{aligned}$$

The value of Value Inc. using the economic-profit approach is \$1,500, exactly the same as with the discounted-cash-flow (DCF) approach.

Economic profit is also useful for comparing the value creation of different companies or business units. Consider Value Inc.'s economic profit of \$50. Suppose Big Inc. had \$5,000 in invested capital but earned only a 15 percent return on capital (and assume it doesn't have investment opportunities with

⁹ The present value of economic profit for a growing perpetuity is economic profit in year 1 divided by the cost of capital minus the growth rate. For Value Inc., the present value of economic profit is therefore $\$50 / (10\% - 5\%)$.

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higher returns on capital). Its economic profit would be \$250. Clearly, creating \$250 of economic profit is preferable to creating \$50.

Finally, measuring performance in terms of economic profit encourages a company to undertake investments that earn more than their cost of capital, even if their return is lower than the current average return. Suppose Value Inc. had the opportunity to invest an extra \$200 at a 15 percent return. Its average ROIC would decline from 20 percent to 18.6 percent, but its economic profit would increase from \$50 to \$60.

CONSERVATION OF VALUE

A corollary of the principle that discounted cash flow (DCF) drives value is the conservation of value: anything that doesn't increase cash flows doesn't create value. That means value is conserved, or unchanged, when a company changes the ownership of claims to its cash flows but doesn't change the total available cash flows—for example, when it substitutes debt for equity or issues debt to repurchase shares. Similarly, changing the appearance of the cash flows without actually changing the cash flows—say, by changing accounting techniques—doesn't change the value of a company.¹⁰ While the validity of this principle is obvious, it is worth emphasizing because executives, investors, and pundits so often forget it, as when they hope that one accounting treatment will lead to a higher value than another or that some fancy financial structure will turn a mediocre deal into a winner.

The battle over how companies should account for executive stock options illustrates the extent to which executives continue to believe (erroneously) that the stock market is unaware of the conservation of value. Even though there is no cash effect when executive stock options are issued, they reduce the cash flow available to existing shareholders by diluting their ownership when the options are exercised. Under accounting rules dating back to the 1970s, companies could exclude the implicit cost of executive stock options from their income statements. In the early 1990s, as options became more material, the Financial Accounting Standards Board (FASB) proposed a change to the accounting rules, requiring companies to record an expense for the value of options when they are issued. A large group of executives and venture capitalists thought investors would be spooked if options were brought onto the income statement. Some claimed that the entire venture capital industry would be decimated because young start-up companies that provide much of their compensation through options would show low or negative profits.

The FASB issued its new rules in 2004,¹¹ more than a decade after taking up the issue and only after the bursting of the dot-com bubble. Despite dire

¹⁰ In some cases, a company can increase its value by reducing its cost of capital by using more debt in its capital structure. However, even in this case, the underlying change is to reduce taxes, but the overall pretax cost of capital doesn't change. See Chapter 33 for further discussion.

¹¹ Financial Accounting Standard 123R, released in December 2004, effective for periods beginning after June 15, 2005.